UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

June 29, 2000

Reply To
Attn Of: OW 131

**MEMORANDUM**

SUBJECT: Biological Evaluation for FWS Species

FROM: Sally Brough
Water Quality Standards Coordinator

TO: To the File

On December 20, 1999 EPA requested a species list from the Fish and Wildlife Service (FWS) for the issuance of a National Pollutant Discharge Elimination System permit for the John M. Asplund Water Pollution Control Facility and for EPA approval of site-specific aquatic life criteria for metals and turbidity in the vicinity of the facility. In a letter, dated December 27, 1999 the FWS indicated that "there are no threatened or endangered species that regularly occur within the affected areas indicated on the maps accompanying your species list request." However, the letter did indicate that threatened Steller's eiders occur in portions of Cook Inlet, in the vicinity of the project area. Therefore, EPA prepared the attached biological evaluation to determine the effects of the NPDES permit issuance and approval of site-specific WQS on Steller's eiders. EPA has determined that renewal of the NPDES permit and approval of the site-specific criteria for upper Cook Inlet will have no effect on Steller's eiders.

April 4, 2000

# Biological Evaluation of Site-Specific Water Quality Criteria for the Point Woronzof Area of Cook Inlet and Reissuance of the Asplund Water Pollution Control Facility NPDES Permit

for the
U. S. Fish & Wildlife Service

Prepared by:

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I. Project Description

U.S. EPA, Region 10, proposes to undertake two federal actions contemplated for the Point Woronzof area of Upper Cook Inlet. The actions are: 1) EPA reissuance of a National Pollutant Discharge Elimination System (NPDES) permit for the Municipality of Anchorage's John M. Asplund Water Pollution Control Facility and 2) EPA approval of State of Alaska site-specific water quality criteria revisions for the Point Woronzof area.

A. NPDES permit reissuance

The first action involves EPA issuance of a permit to regulate a point source discharge. The Clean Water Act (CWA) authorizes EPA to administer the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES program regulates discharges from point sources to waters of the United States. While the majority of states are authorized to administer the NPDES program, the State of Alaska is not among them. Thus, EPA, Region 10, regulates the point source discharges in the state by issuing NPDES permits.

Discharge Location.

The outfall discharges to the saline estuarine waters of Knik Arm in Cook Inlet, 804 ft from shore off Point Woronzof (Figure 1). The discharge depth of the diffuser during the typical 24-hour tidal cycle range from 11.5 feet to 40.5 feet. The outfall location is 61° 12' 22.5" N, 150° 01' 8.7" W. The semidiurnal mixed tides in Knik Arm have a diurnal range of 30 ft and an extreme range of 39 ft. The tides produce swift currents and vigorous mixing off of Point Woronzof. Knik Arm exhibits high tidal velocities (up to approximately 8.2 ft/sec), extensive intertidal mudflats (60 percent of Knik Arm), a brackish salinity range (from 4 parts per thousand (ppt) in summer to 21 ppt in winter), and ice flows from November through April. Currents are influenced primarily by the tides and secondarily by freshwater inflow.

The major rivers and streams contributing fresh water to Knik Arm include the Matanuska River, Knik River, Eagle River, Ship Creek, and Chester Creek. These sources of fresh water, combined with other rivers flowing into Cook Inlet, keep the salinity of Knik Arm generally below 20 ppt. The strong tidal mixing results in weak vertical density gradients throughout the year.

Knik Arm in the vicinity of the Anchorage outfall is classified by the State of Alaska as marine water subject to water quality criteria established for water use classes 2 (A-D) (18 AAC 70.020): aquaculture, seafood processing and industrial water supply, water contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life. Further description of the waters in the action area including circulation, currents, flushing, and stratification can be found in the Fact Sheet accompanying the draft permit, issued November 8, 1999.

Facility Description.

The Municipality of Anchorage treatment plant serves the entire Anchorage area. Plant influent is primarily of domestic origin, although an industrial component is included. There are

no combined sewers in the Anchorage sewer system. The existing facility provides primary treatment for a design average flow of 58 million gallons per day (mgd) and a maximum hourly flow of 154 mgd. The actual average daily discharge is approximately 33 mgd. The applicant projects an average daily discharge of 36 mgd for the year 2005 when EPA will next review the permit.

Existing treatment units provide screening, grit removal, sedimentation, skimming, and chlorination. Sludge from the primary clarifiers is thickened and dewatered. The dewatered sludge and skimmings are incinerated and the ash disposed of in a sanitary landfill. Within the permit period, the sludge volume is expected to increase above the incinerator capacity. The excess sludge will be dewatered and disposed at the city's landfill.

Chlorinated primary effluent is discharged through a 120 inch diameter chlorine contact tunnel and then through an 84 inch diameter outfall to Cook Inlet. Technology based limits for this discharge include biological oxygen demand and total suspended solids. Water quality based limits for this discharge include pH, chlorine, and fecal coliform bacteria. Additional description of the facility including activities and physical characteristics of the discharge can be found in the EPA Fact Sheet for the EPA proposed reissuance of the permit which was made available for public review on November 8, 1999.

B. Site-Specific water quality criteria revisions

Alaska has adopted revisions to its water quality standards regulations to establish numeric site-specific criteria for a defined portion of upper Cook Inlet near Point Woronzof. The numeric site-specific criteria are acute and chronic aquatic life criteria for arsenic, cadmium, chromium VI, copper, lead, mercury, nickel, selenium, silver, and zinc (all measured using the dissolved method) and turbidity.

Site-Specific Area

The area for which the State of Alaska has adopted site-specific criteria is shown in Figure 2. The site-specific area is defined by natural physical features, boundaries and local bathymetry, as well as consideration of the physical oceanographic processes in the area. The area extends from the constriction of Knik Arm at Point Cairn to the northwest, is bounded by the shoreline to the mudflats at the entrance to Turnagain Arm and Fire Island on the southwest and west respectively.

The size of the site-specific area was determined based on two factors; the distance of a tidal excursion of a water parcel and the farfield dilution predictions of hydrodynamic and water quality models of Cook Inlet. The site-specific area is less than 1/3 of a tidal excursion and is contained within the immediate tidal influence occurring in the vicinity of Pt. Woronzof.

Numeric Site-Specific Criteria

The numeric site-specific criteria adopted by Alaska are consistent with EPA's most recent national criteria guidance for metals. EPA's criteria guidance is developed under Section

304(a) of the CWA and is based solely on data and scientific judgements on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting the chemical concentrations in ambient water. The State's numeric site-specific criteria are shown in the following table. Please note that metals criteria for marine waters do not vary with water hardness.

**Site-Specific Criteria for Upper Cook Inlet**

| POLLUTANT | ACUTE (ug/l) | CHRONIC (ug/l) |
|---|---|---|
| Arsenic | 69 | 36 |
| Cadmium | 42 | 9.3 |
| Chromium VI | 1100 | 50 |
| Copper | 4.8 | 3.1 |
| Lead | 210 | 8.1 |
| Mercury | 1.8 | 0.025 |
| Nickel | 74 | 8.2 |
| Selenium | 290 | 71 |
| Silver | 1.9 | - - |
| Zinc | 90 | 81 |
| Turbidity | not to exceed the natural condition | not to exceed the natural condition |

Alaska has adopted site-specific criteria that are consistent with EPA's most recent and scientifically up-to-date acute and chronic aquatic life criteria for metals (except for the chronic criterion for mercury). EPA recommends dissolved aquatic life criteria to set and measure compliance with metal criteria (58 FR 32131). EPA has determined that the dissolved criteria will provide the same level of protection for aquatic life in the water column as the criteria measured as total recoverable because particulate metal is not as biologically available as dissolved metal. Due to the naturally occurring glacial till, the predominate form of metal in upper Cook Inlet is particulate metal and exceedences of total recoverable metals criteria occur.

In the case of mercury, Alaska has adopted an older EPA chronic aquatic life criterion (0.025 ug/l) that is more stringent than the one found in EPA's most recent publication of

National Recommended Water Quality Criteria (0.94 ug/l) (April 1999, EPA 822-Z-99-001).

The turbidity in upper Cook Inlet is attributable to suspended solids in rivers that flow into upper Cook Inlet. The natural levels of turbidity at the site exceed the old Alaska turbidity criterion of 25 NTU. Since aquatic life has adjusted through time to the natural levels of turbidity found at the site, a criterion that does not allow an increase in the natural level of turbidity.

II. Determination of effects

Steller's eiders are diving ducks that spend most of the year in shallow, near-shore marine waters. Molting and wintering flocks congregate in Lower Cook Inlet (USFWS, 1998). The threatened Steller's eider occurs only occasionally in upper Cook Inlet near Anchorage (Balogh, 1999). Exposure to aquatic pollutants for eiders would generally occur through consumption of contaminated food such as molluscs and crustaceans. In surveys of the Point Woronzof area where both the NPDES permit and site-specific criteria would apply, the benthic and planktonic communities have low species diversity and abundance. Sampling of the flora and fauna of the Point Woronzof area resulted in few benthic invertebrates and macroalgae (Asplund, 1998). Due to the lack of prey species, high currents, and low occurrence of Steller's eiders in the action area, **EPA has determined that renewal of the NPDES permit and approval of the site-specific criteria for upper Cook Inlet will have no effect on Steller's eiders.**

III. References

Asplund, J. M. Water Pollution Control Facility, Municipality of Anchorage. 1998. Renewal Application for NPDES Permit and 301(h) Variance from Secondary Treatment.

Balogh, G. R. (Endangered Species Biologist, U. S. Fish & Wildlife Service) 1999. Letter to Sally Brough (Water Quality Standards Coordinator, U. S. Environmental Protection Agency). 27 December 1999.

U. S. Fish & Wildlife Service. 1998. Threatened and Endangered Species: Steller's eider (*Polysticta stelleri*).